

FOO, et al.

Serial No. 09/682,687

**IN THE CLAIMS:**

1. (Once Amended) A method of multi-slice image acquisition with black-blood contrast comprising:

- applying a non-selective inversion pulse;
- applying a re-inversion pulse that is slice-selective over a region encompassing a plurality of slice selections;
- timing execution of a series of RF excitation pulses such that signal from blood is near a null point; and
- acquiring data for the plurality of slice selections.

8. (Once Amended) The method of claim 1 wherein the series of RF excitation pulses is fast spin echo readout pulses and wherein the method further comprises modifying a flip angle of RF excitation pulses executed before and after an occurrence of the null point of the blood to improve blood suppression.

10. (Once Amended) A computer program having a set of instructions that when executed by a computer cause the computer to:

- generate and cause application of a non-selective inversion RF pulse to a slab of slices each having a thickness;
- generate and cause application of a slice-selective re-inversion RF pulse having a slice thickness greater than the thickness of a single slice;
- apply an inversion time;
- apply RF excitations; and
- acquire MR data.

12. (Once Amended) The computer program of claim 10 wherein the RF excitations have a flip angle greater than  $90^\circ$  for segments after a null point and less than  $90^\circ$  for segments before the null point.

15. (Once Amended) An MR apparatus to produce consistent contrast in image acquisition comprising:

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a magnetic resonance imaging (MRI) system having a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR images; and

a computer programmed to apply a pulse sequence having:

a non-selective inversion pulse to invert spins in a longitudinal direction across an entire slab of slices;

a slice-selective re-inversion pulse having an implied width at least as large as that of the non-selective inversion pulse; and

a series of excitation pulses spaced apart from the slice-selective re-inversion pulse by an inversion time.

19. (Once Amended) The MR apparatus of claim 18 wherein the series of excitation pulses is of a fast spin echo readout type and have therein excitation pulses with differing flip angles.

21. (Once Amended) A pulse sequence for use in multi-slice MR data acquisition comprising:

a non-selective inversion pulse applicable to a slab of slices;

a slice-selective re-inversion pulse applicable to at least a number of slices in the slab of slices; and

a series of excitation pulses applicable to the at least a number of slices in the slab of slices after an inversion time.

28. (Once Amended) The pulse sequence of claim 21 wherein the series of excitation pulses have varying flip angles and are fast spin echo readout excitation pulses.